

LASER PULSE PICKING EMPLOYING CONTROLLED AOM LOADING

Abstract

A laser (126) and an AOM (10) are pulsed at substantially regular and substantially similar constant high repetition rates to provide working laser outputs (40) with variable output intervals (50) without sacrificing laser pulse-to-pulse energy stability. When a working laser output (40) is demanded, an RF pulse (38) is applied to the AOM (10) in coincidence with the laser output (24) to transmit it to a target. When no working laser output (40) is demanded, an RF pulse (38) is applied to the AOM (10) in noncoincidence with the laser output (24) so it gets blocked. So the average thermal loading on the AOM (10) remains substantially constant regardless of how randomly the working laser outputs (40) are demanded. The AOM (10) can also be used to control the energy of the working laser output (40) by controlling the power of the RF pulse (38) applied. When the RF power is changed, the RF duration (44) of the RF pulse (38) is modified to maintain the constant average RF power. Consistent loading on the AOM (10) eliminates deterioration of laser beam quality and laser beam pointing accuracy associated with thermal loading variation on the AOM (10) and is advantageous for applications such as IC chip link processing where stable working laser outputs (40) with variable output intervals (50) are needed.